CLAIMS:

1. A database management system for maintaining chunks of data indicative of the states of a database comprising a plurality of data items, both before and after a transaction modifying the state of the database, the system comprising:

(a) memory means for holding data chunks providing permanent records of (i) the state of the database before the database-modifying transaction and (ii) the state of the database after the database-modifying transaction;

(b) relation determination means for relating at least one parent data item in the data chunk indicative of each database state to at least one dependent data item in the same data chunk;

(c) root determination means for determining the position of a root data item in the data chunk indicative of each database state to which other data items in that data chunk are related; and

(d) state determination means for determining the state of the database after the database-modifying transaction by relating the root data item corresponding to that database state to both at least one data item in the data chunk corresponding tothat database state and at least one data item in the data chunk corresponding tothe state of the database before the data-modifying transaction.

2. A system according to claim 1, wherein the state determination means is arranged to relate the root data item in the data chunk corresponding to the database state of the database after the database-modifying transaction to at least one dependent data item by way of at least one parent data item by use of the relation determination means associated with that parent data item.

3 A system according to claim 2, wherein the state determination means is arranged to record the position of the parent data item corresponding to each dependent data item during the tracking of data items.

4. A system according to claim 1, wherein new record compiling means is provided to compile a supplementary chunk of data indicative of the state of the

database after the database-modifying transaction and is arranged to copy those data items from the previous record which have been modified by the transaction whilst not copying those data items from the previous record which have not been modified by the transaction.

5. A system according to claim 4, wherein the new record compiling means is arranged to copy dependent data items from the previous record which have been modified by the transaction, as well as parent items to which those dependent data items are related by the relation determination means.

6. A system according to claim 1, wherein presentation means is provided to present the data items in each record in a different logical structure.

7. A system according to claim 6, wherein the presentation means is adapted to present the data items in the form of a relational database.

8. A system according to claim 6, wherein the presentation means is adapted to present the data items in the form of an object database.

9. A system according to claim 6, wherein the presentation means is adapted to present the data items in the form of a virtual disk drive.

10. A system according to claim 1, wherein previous state location means is provided to relate the data chunk indicative of the state of the database after the database-modifying transaction to the position of the data chunk indicative of the state of the database before the database-modifying transaction.

11. A system according to claim 1, which incorporates a version control system (VCS) defining branch points at which alternative versions of the logical state of the database are allowed to develop in parallel.

12. A system according to claim 11, which is a multi-user system permitting several

users to modify the database simultaneously to produce alternative versions of the state of the database after modification, wherein the memory means is adapted to permanently hold a record of the state of the modified database produced by each user together with an indication of the user's logical view of the database before modification.

13. A system according to claim 11, which provides the user with an undo/redo mechanism, wherein the memory means is adapted to permanently hold records of the state of the modified database produced by first and second database-modifying transactions, whereby, after a first database-modifying transaction made by the user, the state of the database before such database-modifying transaction may be determined in response to an undo command from the user, and subsequently the state of the database after a second database-modifying transaction different to the first database-modifying transaction may be determined in response to a redo command from the user, as an alternative to determination of the state of the database after the first database-modifying transaction.

14. A system according to 13, wherein analysing means is provided to analyse database-modifying transactions made by the user.

15. A system according to 13, wherein mistake identifying means is provided to identify common mistakes made by user in making database-modifying transactions.

16. A system according to claim 1, wherein each record contains metadata providing information relating to the creation of the record.

17 ~~18.~~ A programmed computer incorporating a database management system according to any preceding claim.

18 ~~19.~~ A data storage medium incorporating data recorded by a database management system according to any preceding claim.